

Electric Potential and Field Instrument for CubeSat (EPIC), Phase II

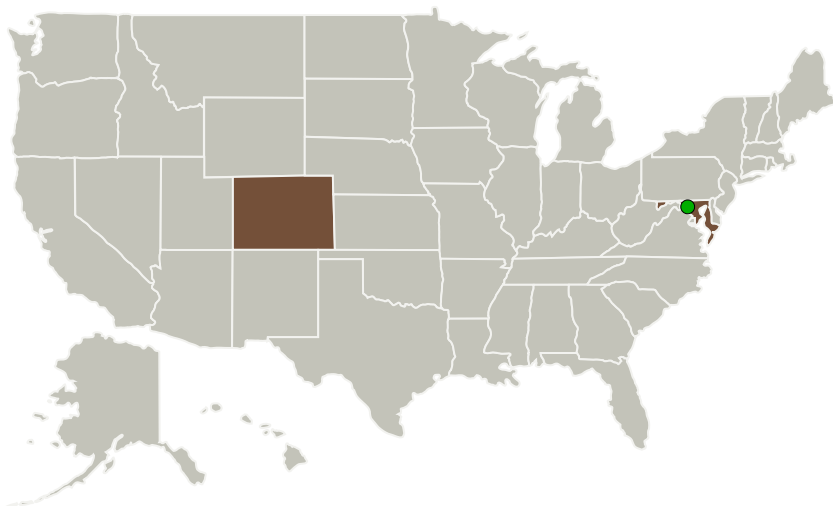
Completed Technology Project (2016 - 2018)



Project Introduction

Our present understanding of magnetosphere-ionosphere coupling is limited, partly due to the lack of broad statistical observations of the 3-dimensional (3D) electric field in the altitude region between 300 and 1000km. This understanding is of national importance because it is a necessary step toward developing the ability to measure and forecast the "space weather" that affects modern technology. The high cost of space access and short satellite lifetimes below 500 km make traditional satellites uneconomical for performing these measurements. Therefore, it is desirable to develop smaller and lower-cost sensor/satellite systems, such as CubeSats, so that the largest possible number of distributed measurements can be economically made in this region. The proposed project seeks to develop a 3D vector electric field instrument that can be accommodated in less than half of a 6U (10x20x30 cm) CubeSat. This instrument is enabled by CTD's game changing deployable composite boom technology that provides lightweight, stiff, straight, and thermally stable booms capable of being stowed within a CubeSat form factor. The proposed development will also provide the CubeSat community with the capability to include one or more deployable booms with lengths greater than 5 meters for future CubeSat missions.

Primary U.S. Work Locations and Key Partners



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Organizations Performing Work	Role	Type	Location
Composite Technology Development, Inc.	Lead Organization	Industry	Lafayette, Colorado
● Goddard Space Flight Center(GSFC)	Supporting Organization	NASA Center	Greenbelt, Maryland

Primary U.S. Work Locations	
Colorado	Maryland

Images



Briefing Chart Image

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(<https://techport.nasa.gov/image/130294>)

Organizational Responsibility

Responsible Mission Directorate:

Space Technology Mission Directorate (STMD)

Lead Organization:

Composite Technology Development, Inc.

Responsible Program:

Small Business Innovation Research/Small Business Tech Transfer

Project Management

Program Director:

Jason L Kessler

Program Manager:

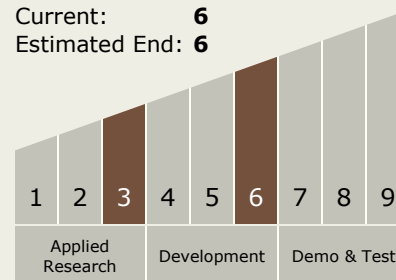
Carlos Torrez

Principal Investigator:

Alexi Rakow

Technology Maturity (TRL)

Start: 3
Current: 6
Estimated End: 6



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Technology Areas

Primary:

- TX02 Flight Computing and Avionics
 - └ TX02.1 Avionics Component Technologies
 - └ TX02.1.5 High Performance Field Programmable Gate Arrays

Target Destinations

The Sun, Earth, The Moon, Mars, Others Inside the Solar System, Outside the Solar System